UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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OFFICE OF
ENFORCEMENT AND
COMPLIANCE ASSURANCE

Paul Cairney
Vice President
Manufacturing & Design
MaxWest Environmental Systems, Incorporated
114 W. First Street
Suite 220
Sanford, Florida 32771

Dear Mr. Cairney:

This is in response to your letter of August 26, 2010, concerning a request for a determination of applicability of 40 CFR Part 61, Subpart E, National Emission Standard for Hazardous Air Pollutants (NESHAP) for Mercury to the integrated biosolids management system (IBMS) owned and operated by MaxWest, Incorporated, at the South Sanford Water Resources Center in Sanford, Florida. In general, the process uses dried biosolids as a feedstock in the gasifier to produce syngas for heat energy to be transferred to the indirect sludge dryer. Based on the information provided in your letters of August 29, 2010 and September 10, 2010, and for the reasons described herein, the United States Environmental Protection Agency (Agency or EPA) believes that Subpart E is applicable to the gasifier/thermal oxidizer portions of the IBMS system located at South Sanford Water Resources Center in Sanford, Florida.

In the August 26, 2010 letter, MaxWest provides a process description of the IBMS. Sludge from the City of Sanford and other domestic wastewater treatment plants is first dewatered using a belt-filter press, then dried using a dryer which uses thermal fluid as the heat transfer media. Dried sludge, which MaxWest refers to as "biosolids", are then transported to the gasifier in which the material is converted to synthesis-gas (syngas), a mixture composed mostly of carbon monoxide and hydrogen. The gasification process is started using an electric heat source. Syngas generated from the gasifier is then combusted in an integrated thermal oxidizer to produce heat which is passed through a heat exchanger to transfer heat to the thermal fluid, which is pumped in a closed cycle to the indirect sludge dryer. The post-thermal oxidation train includes: first, a lime-injected fabric filter, followed by a wet scrubber to clean the exhaust gases prior to discharge to the atmosphere.

Section 61.50 provides the applicability for Subpart E:

> [t]he provisions of this subpart are applicable to those stationary sources which ... incinerate or dry wastewater treatment plant sludge.

The terms "incinerate" and "dry" are not defined in Subpart E, but Section 61.51(m) defines "sludge dryer" as: "a device used to reduce the moisture content of sludge by heating to temperatures above 65 °C (ca. 150 °F) directly with combustion gases." The standard at Section 61.52(b) applies to sludge incineration plants, sludge drying plants, or a combination of these that process wastewater treatment plant sludges.

Historically, the Agency originally proposed Subpart E (36 FR 23239) and promulgated Subpart E (38 FR 8820) to apply to mercury emissions from mercury ore processing and mercury cell chlor-alkali plants. After promulgation of the rule, the Environmental Defense Fund lodged a petition for review and questioned the impact on public health of mercury emissions from sewage sludge incinerators. In response, the Agency initiated a study "to more completely characterize emissions of mercury from sewage sludge incinerators". (39 FR 38067). On October 24, 1974, EPA proposed standards for emissions of mercury from the incineration and drying of wastewater treatment plant sludges.

In the October 24, 1974, proposal, EPA states that:

> [m]ercury is emitted from the drying of municipal sludges and the incineration of industrial wastewater . . . [and] . . . municipal sludges. 39 FR 38067.

A change to the proposed amendment was published on October 14, 1975, to clarify that:

> [t]he proposed definition of "sludge dryer" has been revised to indicate more clearly that only sludge drying operations that are directly heated by combustion gases are covered by the amendment. 40 FR 48297.

EPA also provided a "Description of the Industry" in the ***Background Information on National Emission Standards for Hazardous Air Pollutants – Proposed Amendments to Standards for Asbestos and Mercury*** (EPA Document Number EPA-450/2-74-009a; October 1974). On page 84, EPA states:

> Incineration of sludges involves combustion of greater than 99 percent of the combustible content of the sludges. Drying is the removal of water from sludge by heating it with combustion gases to a temperature above 65°C (ca. 150°F).

In 1984, during the review of the Mercury NESHAP, the Agency discussed the sludge incineration and drying process in Document Number EPA-450/3-84-014 ***"Review of National Emission Standards for Mercury,*** page 5-3:

> Incinerators are used for treatment of sludge produced by municipal or industrial wastewater treatment plants. Incineration is a two step process that involves first drying and then combustion. In all furnaces, the temperature of the dewatered sludge is raised to 100°C (212°F) to evaporate water from the sludge, then, the temperature of the water, vapor, air and sludge is increased to the ignition point of the sludge volatiles.

In addition, on page 5-6, EPA describes sludge dryers:

> Heat drying is used to evaporate water in the sludge. Conventional heat-drying systems include rotary kiln drying, flash drying, drying in incinerators, and spray drying. Before heat drying, the sludge is usually mechanically dewatered. In the dryer, water that was not mechanically separated is evaporated without decomposing the organic matter in the sludge solids.

For MaxWest, the Agency identifies three parts of the process that must be evaluated to determine the applicability of Subpart E. As named and described by MaxWest, they are: 1) sludge drying; 2) sludge gasification; and 3) combustion of the resultant syngas in the thermal oxidizer.

Sludge Dryer

MaxWest describes the IBMS dryer as being indirectly heated by thermal transfer fluid with no contact with combustion gases. According to the applicability of Subpart E, the subpart applies, in part, to stationary sources which dry wastewater sludge. The standards apply, in part, to "sludge drying plants". While neither "stationary sources which dry wastewater sludge" nor "sludge drying plants" are defined in Subpart E, "sludge dryer" is a defined term, incorporating the concept that the moisture content is reduced directly with combustion gases. Section 61.51(m).

Additionally, the preamble language to the October 14, 1975 proposal, states

> [t]he proposed definition of "sludge dryer" has been revised to indicate more clearly that *only* sludge drying operations that directly heated by combustion gases are covered by the amendment. 40 FR 48297. Emphasis added.

Therefore, the Agency agrees that the IBMS dryer, which is indirectly heated by thermal transfer fluid, is not a 'sludge dryer" as defined by Subpart E and is not subject to Subpart E.

Dried Sludge Gasification and Syngas Combustion

MaxWest describes the second part of the IBMS: a "gasifier" in which biosolids are converted to produce gas [primarily carbon monoxide (CO) and hydrogen], and the final step of the IBMS is a "thermal oxidizer", in which the produced gas is combusted in a thermal oxidizer to produce heat. The produced heat is passed through a heat exchanger to heat the thermal fluid to be used in the indirect drying step.

As previously discussed, the background documents describe sludge incineration as a two-step process that involves first evaporating water from the sludge, then increasing the temperature to the ignition point of the sludge volatiles. (EPA-450/3-84-014 page 5-3). A process that separates these steps between two units, one that produces the gases through the heating of sewage sludge, and a follow up unit in which the gases are combusted and emissions vented to the atmosphere, meets this description. Additionally, the emissions standard is applicable to the entire plant, so we anticipate reduction of mercury emissions prior to any point in which they are discharged to the atmosphere. As such, we believe the combination of the gasifier and thermal oxidizer at South Sanford Water Resources Center in Sanford, Florida, is a sewage sludge incinerator to which Subpart E is applicable.

In addition, MaxWest should be aware that the Agency recently proposed Standards of Performance and Emissions Guidelines for sewage sludge incinerators under Section 129 of the Clean Air Act. 75 FR 63260.

40 CFR Part 60 Subpart E, Standards of Performance for Incinerators also applies to certain incinerators meeting the applicability of Section 60.50. MaxWest is encouraged to evaluate these rules for potential applicability.

This response was coordinated with the Office of Air Quality Planning and Standards, the Office of General Counsel, and EPA Region IV. If you have any questions, please contact Marcia Mia, of my staff, at (202) 564-7042.

Sincerely,

for Ken Gillis

Richard F. Duffy, Acting Director
Compliance Assessment and Media Programs Division
Office of Compliance